IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A quantum circuit comprising:

means for representing ~~a first section configured to represent~~ a quantum bit by at least one polarization direction of light;

means for sequentially supplying ~~a second section configured to sequentially supply~~ a sequence of polarized light pulses representing a quantum bit string to a means for determining ~~the quantum circuit; and a third section configured to determine~~ an amount of polarization rotation and a phase difference applied to a certain light pulse on the basis of a polarization measurement of a preceding input light pulse sequence, ~~thus~~ realizing a controlled-unitary transform configured to cause a phase difference between a polarization indicating a $|0\rangle$ state and a polarization indicating a $|1\rangle$ state.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The quantum circuit according to claim 1, further comprising:

means for coupling ~~a fourth section configured to couple~~ a plurality of outputs of a polarization beam splitter via a polarization maintaining fiber; and

a phase modulator arranged in a position deviated from a middle point of the polarization maintaining fiber, thus causing the phase difference between the polarization indicating the $|0\rangle$ state and the polarization indicating the $|1\rangle$ state.

Claim 4 (Previously Presented): The quantum circuit according to claim 1, wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.

Claim 5 (Currently Amended): A quantum computer including a quantum circuit, the quantum circuit comprising:

a first section, including a polarization beam splitter, configured to represent a quantum bit by at least one polarization direction of light and provide an output;

a second section, responsive to the output of the first section, configured to sequentially supply a sequence of polarized light pulses representing a quantum bit string to a third section, ~~the quantum circuit; and a~~ the third section being configured to determine an amount of polarization rotation and a phase difference applied to a certain light pulse on the basis of a polarization measurement, by at least two detectors, of a preceding input light pulse sequence, ~~thus~~ realizing a controlled-unitary transform configured to cause a phase difference between a polarization indicating a $|0\rangle$ state and a polarization indicating a $|1\rangle$ state.

Claim 6 (Previously Presented): The quantum circuit according to claim 3, wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.

Claim 7 (Currently Amended): A quantum computer according to Claim 5, wherein the quantum circuit further comprises:

a fourth section configured to couple a plurality of outputs of [[a]] the polarization beam splitter of the first section via a polarization maintaining fiber; and

a phase modulator arranged in a position deviated from a middle point of the polarization maintaining fiber, thus causing the phase difference between the polarization indicating the | 0 > state and the polarization indicating the | 1 > state.

Claim 8 (Previously Presented): A quantum computer according to Claim 5, including a quantum circuit wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.

Claim 9 (Previously Presented): A quantum computer according to Claim 7, including a quantum circuit wherein in the sequence of polarized light pulses representing the quantum bit string, a number of photons included in a single pulse is larger than 1.